pregnant women who smoke cigarettes are at increased risk of both having a poor dietary intake and low weight gain during gestation, and because pregnant women who quit smoking are at increased risk of excessive weight gain during gestation,[15] individualized nutritional counseling is recommended[15,16] in addition to smoking-cessation efforts.

Every pregnant woman deserves access to information, counseling, and appropriate interventions that support the healthiest possible outcomes for her and her developing fetus. Research is needed to improve the efficacy of smoking-cessation interventions for pregnant women, which are already known to be cost effective.[17] Research is also needed to identify effective interventions to improve maternal dietary intake and ensure adequate weight gain during pregnancy, especially for cigarette smokers. Furthermore, we need to find affordable and efficient ways to integrate these activities into all health care settings, including public clinics, private practice, and managed care. □

*Kathleen M. Rasmussen*
*Division of Nutrition Sciences*
*Cornell University*
*Ithaca, NY*

*Barbara Adams*
*School of Public Health*
*University of California*
*Berkeley*

## References

1. Institute of Medicine. Subcommittees on Nutritional Status and Weight Gain during Pregnancy and Dietary Intake and Nutrient Supplements during Pregnancy, Food and Nutrition Board. *Nutrition during Pregnancy: Weight Gain; Nutrient Supplements.* Washington, DC: National Academy Press; 1990.
2. Dolan-Mullen P, Ramírez G, Groff JY. A meta-analysis of randomized trials of prenatal smoking cessation interventions. *Am J Obstet Gynecol.* 1994;171:1328–1334.
3. Kramer MS. Intrauterine growth and gestational duration determinants. *Pediatrics.* 1987;80:502–511.
4. Hellerstedt WL, Himes JH, Story M, Alton IR, Edwards LE. The effects of cigarette smoking and gestational weight change on birth outcomes in obese and normal-weight women. *Am J Public Health.* 1997;87:591–596.
5. Longo LD. The biological effects of carbon monoxide on the pregnant woman, fetus and newborn infant. *Am J Obstet Gynecol.* 1977;129:69–103.
6. Trygg K, Lund-Larsen K, Sandstad B, Hoffman JH, Jacobsen G, Bakketeig LS. Do pregnant smokers eat differently from pregnant non-smokers? *Paediatr Perinat Epidemiol.* 1995;9:307–318.
7. Haste FM, Brooke OG, Anderson HR, Bland JM. The effect of nutritional intake on outcome of pregnancy in smokers and non-smokers. *Br J Nutr.* 1991;65:347–354.
8. Haste FM, Brooke OG, Anderson HR, et al. Nutrient intakes during pregnancy: observations on the influence of smoking and social class. *Am J Clin Nutr.* 1990;51:29–36.
9. McPhillips JB, Eaton CB, Gans KM, et al. Dietary differences in smokers and nonsmokers from two southeastern New England communities. *J Am Diet Assoc.* 1995;84:287–292.
10. Floyd RL, Rimer BK, Giovino GA, Mullen PD, Sullivan SE. A review of smoking in pregnancy: effects on pregnancy outcomes and cessation efforts. *Annu Rev Public Health.* 1993;14:379–411.
11. Fingerhut LA, Kleinman JC, Kendrick JS. Smoking before, during, and after pregnancy. *Am J Public Health.* 1990;18:541–544.
12. Quinn VP, Mullen PD, Ershoff DH. Women who stop smoking spontaneously prior to prenatal care and predictors of relapse before delivery. *Addict Behav.* 1991;16:29–40.
13. Lieberman E, Gremy I, Lang JM, Cohen AP. Low birthweight at term and the timing of fetal exposure to maternal smoking. *Am J Public Health.* 1994;84:1127–1131.
14. Kogan MD, Kotelchuck M, Alexander GR, Johnson WE. Racial disparities in reported prenatal care advice from health care providers. *Am J Public Health.* 1995;84:82–88.
15. Institute of Medicine. Committee on Nutritional Status during Pregnancy and Lactation. *Nutrition Services in Perinatal Care.* Washington, DC: National Academy Press, 1992.
16. Mongoven M, Dolan-Mullen P, Groff JY, Nicol L, Burau K. Weight gain associated with prenatal smoking cessation in white, non-Hispanic women. *Am J Obstet Gynecol.* 1996;174:72–77.
17. Windsor RA, Lowe JB, Perkins LL, et al. Health education for pregnant smokers: its behavioral impact and cost benefit. *Am J Public Health.* 1993;83:201–206.

# Annotation: HIV Prevention Challenges—Realistic Strategies and Early Detection Programs

European public health officials have succeeded in protecting their young people from human immunodeficiency virus (HIV) in ways that American policymakers have not. The most significant and dramatic increases occurred in Switzerland over 7 years in condom use, fear of contracting HIV, and knowledge of HIV prevention strategies. These positive changes concurred with the implementation of a coherent and comprehensive national policy of stopping AIDS.[1] The changes, greatest among youths aged 17 to 25 years, were larger than changes simultaneously observed among youths in the United States, France, Germany, Scotland, and Sweden. These data demonstrate the potential efficacy of consistent application over time of intensive national intervention programs.

However, the data also highlight the need for additional HIV prevention strategies. Those who want children, for example, must abandon condom use for HIV protection. The prevention strategies in the Swiss agenda do not provide adequate protection from HIV when pregnancy is desired. We must identify strategies that both protect from HIV and allow pregnancy. A combination strategy of HIV testing and monogamy offers one approach. HIV testing allows early detection of infection and has two benefits: the infected can take precautions to limit further transmission and can implement prophylactic treatments such as protease inhibitors[2] or azidothymidine during pregnancy.[3] While HIV testing increased from 3% to 4% (a statistically significant increase), the vast majority of the Swiss population is not tested for HIV. In countries with higher seroprevalence rates, the impact of increased condom use will be far less than the potential response to routine HIV testing for early detection of infection.[4] While the Swiss data demonstrate the positive behavioral impact of national policies, the data also signal that a new era in prevention must unfold. Policymakers must recognize that early detection of infection is a cornerstone of any national prevention agenda.

National challenges exist to adapt realistic goals regarding adolescent sexuality, to implement effective HIV prevention programs for youth, and to implement early detection programs for HIV. The United States has not increased consistent

**Editor's Note.** See related article by Dubois-Arber et al. (p 558) in this issue.

condom use or monogamy, nor has it universally adopted realistic HIV prevention messages for youths. While the Swiss campaign was proceeding over the last 7 years, sexual acts that put young people at risk in the United States rose significantly. The age of those infected by HIV declined: 1 in 4 new infections is occurring in youths under the age of 22.[5] Unlike HIV infection patterns among adults, adolescent women are being infected through heterosexual transmission at a rate almost equal to gay and bisexual male adolescents.[6] The rates of HIV infection are not surprising, given the concurrent rise in other indices of sexual risk. From 1985 to 1990, increasing numbers of adolescents were becoming sexually active at younger ages,[7,8] and the number of teenage mothers aged 13 to 15 rose by 26%.[9] The overall US rate of teenage motherhood is double that of England, France, and Canada.[10] Two thirds of cases of sexually transmitted disease involve youths under the age of 25.[11] Condom use at first intercourse increased from 28% to 55%,[12] but estimates of consistent condom use are in the range of 10% to 20%.[13] Young people in the United States are at increasing sexual risk for HIV infection.

Simultaneously, the frequency of other problem behaviors among adolescents decreased in the United States. Declines in drug use,[14] daily drinking,[15] death through unintentional injuries,[14] alcohol-related automobile fatalities,[16] and school dropouts[17] were substantial. These public health successes found no parallel in sexual behavior.

Why are youths in Switzerland and other European countries reducing their risk for HIV, while youths in the United States increasingly demonstrate self-defeating patterns of sexual risk taking? Among multiple reasons, basic problems appear to be a cultural fear of adolescent sexuality and the limited scope of messages which that fear generates among legislators at the local, state, and federal level, among the media, within agencies providing HIV-related services, and in institutions not directly involved with HIV services, such as schools.

The Swiss prevention program stresses "responsible sexuality." The dominant U.S. prevention message to youths has been "abstinence." Despite substantial evidence that condom promotion programs do not increase sexual activity[e.g., 18–20], fears remain that condom distribution will encourage sexual acts. Condom promotion programs have led to substantial reductions in teenage pregnancies, births, and sexually transmitted diseases in several European countries.[21] In contrast, in the United States, television networks will not permit condom ads that could normalize acceptance of condoms.[22] However, television is allowed to consistently glamorize sex. Similarly, news reports focus on conflict regarding HIV education and play down effective HIV prevention programs.[22]

The adoption of HIV prevention by mainstream US institutions faces many challenges. The Red Cross recently removed condom education from programs reaching about 1 million adolescents.[28] Only in the last year has the American Academy of Pediatrics[31] endorsed condom use; many other professional organizations remain silent on the issue.

Schools are narrow in their HIV prevention messages, usually limiting them to encouragement of abstinence. Schools fear parents' responses, despite high levels of support from parents for comprehensive school-based HIV prevention programs and parents' anticipations of positive outcomes for those programs.[23–25] Currently, 39 states require schools to develop HIV prevention programs;[26] 25 mandate abstinence instruction.[27] Only 25 states have developed an HIV curriculum,[27] and 6 states have advocated a comprehensive HIV prevention strategy for kindergarten to 12th grade. Only 37% of programs have any direct instruction regarding condom efficacy or use.[26] In schools with programs for condom availability, accessibility to condoms is limited by requirements for parental consent (81%) and often by the hours and conditions of distribution.[29,30] HIV prevention is not part of teacher credentialing or training programs, and the quality of HIV prevention in classroom presentations varies considerably.[18,26,27]

When one turns to the content of preventive interventions with adolescents, the creation of comprehensive prevention strategies poses a broad challenge. Condoms are not a universal solution for HIV prevention, particularly to anyone desiring children. Nor can condom use be easily implemented by young women in relationships in which they have less power than their boyfriends.[32] Since "monogamy" as perceived and practiced by adolescents typically has a duration of 3 to 6 months,[13,33] it does not provide long-term protection for youths, particularly poor Latino and African-American girls living in AIDS epicenters with high rates of substance use in their neighborhood.[34] Alternatives are needed.

Large-scale HIV testing is one such alternative. In 1988, Kutchinsky[35] advocated a multistage strategy of personal protection: condom use until one is committed to a single partner; both partners then test for HIV, use condoms another 6 months, get retested for HIV, and then stop using condoms. This strategy allows conception, if desired, and recognizes that lifetime condom use is an unrealistic expectation. Testing can be implemented in multiple ways (e.g., with pre- and post-test counseling; at home, alone; in agencies, but client controlled). As saliva and blood home testing become available, the possibility of couples testing together begins to emerge. Annual testing as a part of routine health care may reduce transmission to a significantly greater degree than testing premarital couples or pregnant mothers.[3] Such a program provides more than an alternative prevention strategy. Early detection allows for the secondary benefits of prophylactic medical treatments and behavioral interventions to reduce transmission. Female barrier methods, such as the female condom—largely unexplained and unused—can be introduced.[36] The quick introduction of viricides and microbicides must be planned now before the products are approved for release. Prevention strategies tailored to the environmental niches of persons at high risk (e.g., homeless, injection drug users) are also needed.

While we have recognized the importance of these approaches, our HIV testing strategies have not evolved. The Swiss did not include testing as part of their consistent, global message, and HIV testing did not rise at a meaningful rate. In the United States, about 13% of those tested at Centers for Disease Control and Prevention anonymous test sites are adolescents.[37] Fewer than 39% of school-based clinics provide access to HIV testing.[29] Community-based agencies that provide HIV prevention services are not typically designed for adolescents.[38] Among New York City agencies serving high-risk youths (runaways, gay youths), only about 39% of youths are tested; in contrast, 89% of youths in Los Angeles and San Francisco are being tested.[39] Existing pre- and post-test counseling requirements have not been consistently implemented,[39] nor have they proved effective as a model for testing. This situation suggests that our current ideas about how, where, and when to test should be reexamined.

It is high time to rethink our national agenda for adolescent HIV prevention.

We need to implement a range of alternative prevention strategies that meet the needs of a multicultural society. In doing so, we need to examine alternatives to our present objectives. The Swiss have provided us with both hope and direction for future research and public policy intervention. □

*Mary Jane Rotheram-Borus*
*Department of Psychiatry*
*University of California*
*Los Angeles*

## Acknowledgments

This paper was completed with the support of National Institute of Mental Health grant 1R01 MH49958-04 and National Institute on Drug Abuse grant R01 DA-07903 to the author.

## References

1. Dubois-Arber F, Jeannin A, Konings E, Paccaud F. Increased condom use without other major changes in sexual behaviour among the general population in Switzerland. *Am J Public Health.* 1997; 87:558–566.
2. Nelson H. Protease inhibitors show promise in HIV infection. *Lancet.* 1996;347: 383.
3. *Recommendations of the U.S. Public Health Service Task Force on the use of zidovudine to reduce perinatal transmission of human immunodeficiency virus.* Atlanta, Ga: Centers for Disease Control and Prevention; 1994:43(RR-11).
4. Frerichs RR. Personal screening for HIV in developing countries. *Lancet.* 1994;343: 960–962.
5. Rosenberg PS, Biggar RJ, Goedert JJ. Declining age at HIV infection in the United States. *New Engl J Med.* 1994;330: 789–790. Letter.
6. Centers for Disease Control and Prevention. U.S. HIV and AIDS cases reported through December 1995. *HIV/AIDS Surveill Rep.* 1995:7.
7. National Center for Health Statistics. Premarital sexual experience among adolescent women: U.S., 1970–1988. *MMWR Morb Mortal Wkly Rep.* 1991;39:932.
8. Forrest JD, Singh S. The sexual and reproductive behavior of American women, 1982–1986. *Fam Plann Perspect.* 1990;22: 206–214.
9. Spitz AM, Velebil P, Koonin LM, et al. Pregnancy, abortion, and birth rates among US adolescents–1980, 1985, and 1990. *JAMA.* 1996;275:989–994.
10. *Statement of the Center for Population Options, Hearing before the Select Committee on Children, Youth, and Families, House of Representatives; June 18, 1991.* Washington, DC: US Government Printing Office; 1992.
11. *Sexually Transmitted Disease Surveillance, 1992.* Atlanta, Ga: Centers for Disease Control and Prevention; July 1993.
12. Peterson LS. Contraceptive use in the United States: 1982–90. *Adv Data Vital Health Stat.* 1995 (6).
13. Seidman SN, Rieder RO. A review of sexual behavior in the United States. *Am J Psychiatry.* 1994;15:330–341.
14. Sells CW, Blum RW. Morbidity and mortality among US adolescents: an overview of data and trends. *Am J Public Health.* 1996;86:513–519.
15. Johnston LD, O'Malley PM, Bachman JG. *National Survey Results on Drug Use from The Monitoring The Future Study, 1975–1994.* Rockville, Md: National Institute on Drug Abuse; 1995;1.
16. Reduction in alcohol-related traffic fatalities—United States, 1990–1992. *JAMA.* 1994;271:100.
17. *The Condition of Education, 1994.* Washington, DC: US Department of Education, National Center for Education Statistics. 1995.
18. Kirby D, Short L, Collins J, et al. School-based programs to reduce sexual risk behaviors: A review of effectiveness. *Public Health Report.* 1994;109:339–360.
19. Kirby D, Waszak C, Ziegler J. Six school-based clinics: their reproductive health services and impact on sexual behavior. *Fam Plann Perspect.* 1991;23:6–16.
20. Sellers DE, McGraw SA, McKinley JB. Does the promotion and distribution of condoms increase teen sexual activity? Evidence from an HIV prevention program for Latino youth. *Am J Public Health.* 1994;84:1952–1958.
21. Piot P, Islam MQ. Sexually transmitted diseases in the 1990s. Global epidemiology and challenges for control. *Sex Transm Dis.* 1994;21:S7–S13.
22. National Commission on AIDS. Preventing HIV/AIDS in adolescents. *J Sch Health.* 1994;64:39–51.
23. Guttmacher S, Lieberman L, Ward D, Radosh A, Raferty Y, Freudenberg N. Parents' attitudes and beliefs about HIV/AIDS prevention with condom availability in New York City public high schools. *J Sch Health.* 1995;65(3):101–106.
24. Louis Harris and Associates. *America Speaks: Americans' Opinions on Teenage Pregnancy, Sex Education and Birth Control.* New York, NY: Planned Parenthood Federation of America; 1988.
25. The Roper Organization. *AIDS: Public Attitudes and Education Needs.* New York, NY: Gay Men's Health Crisis, 1991.
26. Collins JL, Small ML, Kann L, Pateman BC, Gold RS, Kolbe LJ. School health education. *J Sch Health.* 1995;65(8):302–311.
27. *SIECUS Review of State Education Agency HIV/AIDS Prevention and Sexuality Education Programs.* New York, NY: Sexuality Information and Education Council of the United States; 1995.
28. Ferrier MB. Politicians censor HIV/AIDS training programs for youth. *Youth Today: The Newspaper on Youth Work.* 1996;5(1): 1,12–14.
29. McKinney DH, Peak GL. *School-Based and School-Linked Health Centers.* Washington, DC: Advocates for Youth; 1995.
30. *Condom Availability in Schools: An Integral Component to Comprehensive School Health Programs.* Washington, DC: Advocates for Youth; 1992.
31. American Academy of Pediatrics: Committee on Adolescence. Condom availability for youth. *Pediatrics.* 1995;95:281–285.
32. Campbell CA. Male gender roles and sexuality implications for women's AIDS risk and prevention. *Soc Sci Med.* 1995; 41(2):197–210.
33. Hernandez, JT, Smith FJ. Inconsistencies and misperceptions putting college students at risk of HIV infection. *J Adolesc Health Care.* 1990;11:295–297.
34. Rotheram-Borus MJ, Jemmott LS, Jemmott JB. Preventing AIDS in female adolescents. In: O'Leary A, Jemmott LS, eds. *Women at Risk: Issues in the Primary Prevention of AIDS.* New York: Plenum; 1995;103–129.
35. Kutchinsky, B. *The Role of HIV Testing in AIDS Prevention.* Copenhagen, Denmark: University of Copenhagen; 1988.
36. Gollub EL. Women-centered prevention techniques and technologies. In: O'Leary A, Jemmott LS, eds. *Women at Risk: Issues in the Primary Prevention of AIDS.* New York: Plenum; 1995:43–82.
37. Centers for Disease Control and Prevention. Publicly funded HIV counseling and testing—United States, 1990. *Patient Educ Counsel.* 1992;19:219–228.
38. Rotheram-Borus MJ, Feldman J, Rosario M, Dunne E. Preventing HIV among runaways: victims and victimization. In: DiClemente R, Peterson J, eds., *Preventing AIDS: Theories and Methods of Behavioral Interventions.* New York: Plenum Press; 1994;175–188.
39. Rotheram-Borus MJ, Gillis JR, Reid HM, Fernandez MI, Gwadz M. HIV testing, behaviors and knowledge among adolescents at high risk. *J Adolesc Health.* In press.

# Annotation: Wanted—A Simple and Meaningful HIV Staging System

Clinicians, researchers, and patients have long sought a simple and accurate means by which to predict the course of human immunodeficiency virus (HIV) disease. The article by Seage et al. in this issue of the Journal describes a new score for predicting survival for patients with acquired immunodeficiency syndrome (AIDS)—the Boston AIDS Survival Score (BASS).[1] The authors undertook this work to identify predictors of survival for 1 to 2 years that would enable clinicians to

**Editor's Note.** See related article by Seage et al. (p 567) in this issue.